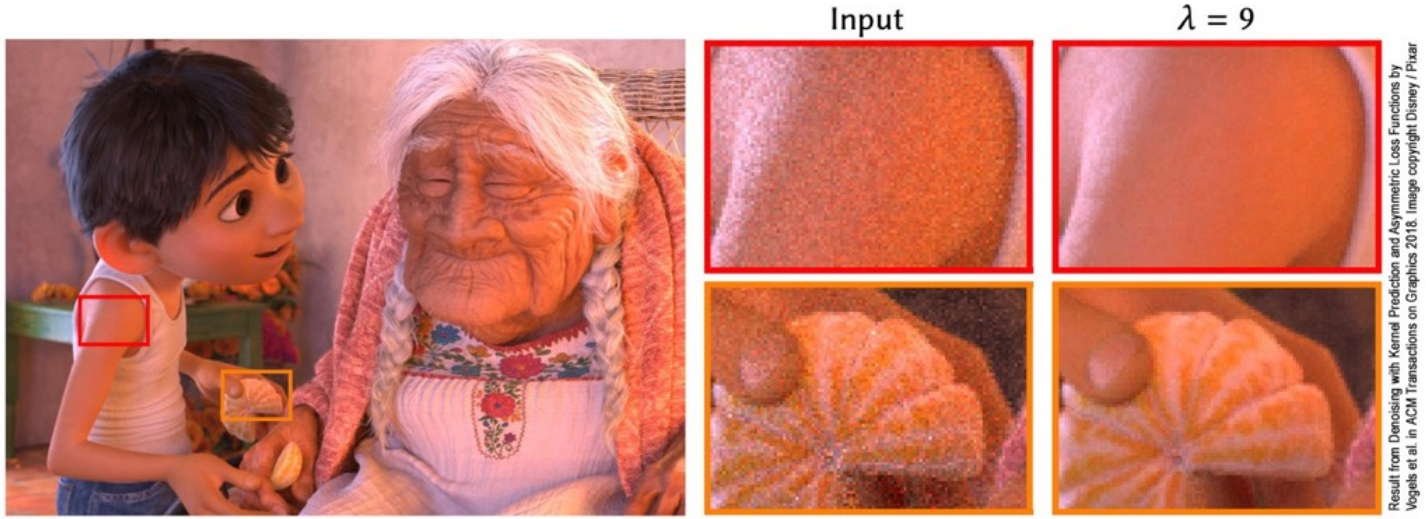


CS 888 Fall'19
Advanced Topics in Computer Graphics:

Ray Tracing Seminar

Profs. Morgan McGuire, Stephen Mann, and Craig Kaplan
Cheriton School of Computer Science
University of Waterloo

Course Info

- Friday 10am – 1pm, Sept. 6 – Nov. 29 in DC 2568
- https://morgan3d.github.io/advanced-ray-tracing-course/index.html

- Read, present, and discuss research papers
- **Coding warmup due Sept 20:** write a pure path tracer
- **Final project due Nov 29**: implement a rendering algorithm, write a short report, and give a 10 min talk

Evaluation

Participation: 25%

- Weekly 1-paragraph summaries
- Participate in discussions

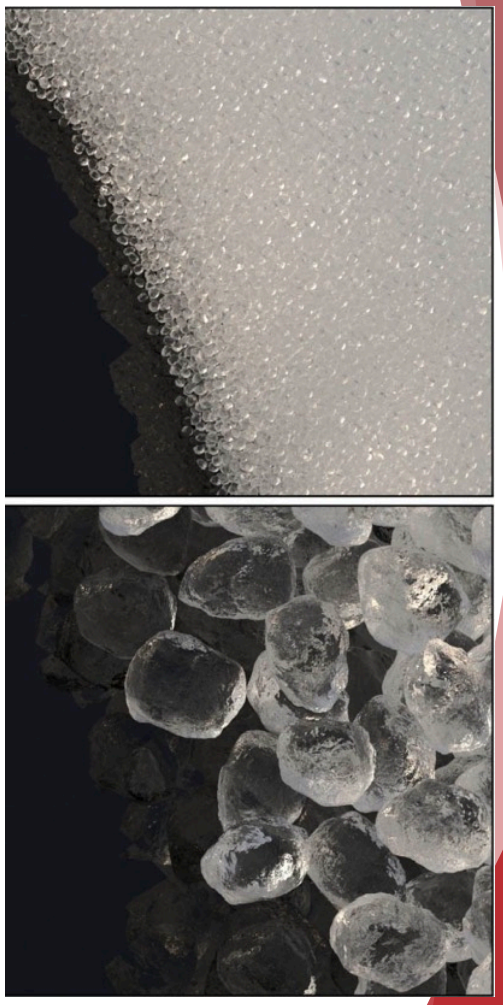
Warmup (Path Tracing): 10%

Your Presentation: 30%

- Presentation clarity
- Correctness
- Lecture notes

Final Project: 35%

- Code and results
- 3-page report
- 10 minute presentation



Meng et al. ‘15

Warmup Project

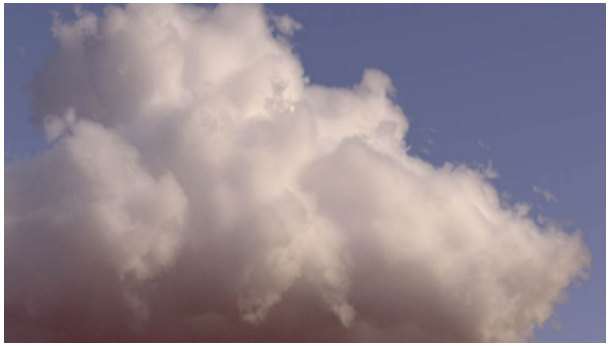
- **Implement a pure path tracer**
  - Triangles + spatial data structure, 3D model loading from a standard file format, Lambertian reflection, glossy reflection, refractive transmission, cosine importance sampling, and area sources are required
  - Direct illumination, point sources, denoising, QMC, MIS, advanced importance sampling, and performance *not* required
- **Two-page report + code**
  - Images showing Lambertian, glossy, and refractive scattering
- Due Sept. 20, 2019 before class in LEARN
- You may use libraries for:
  - Material (BSDF)
  - Intersection (e.g., BVH & ray-triangle)
  - Asset loading & image saving

Image by Wayne Young
https://www.flickr.com/photos/30974264@N02/44441603622

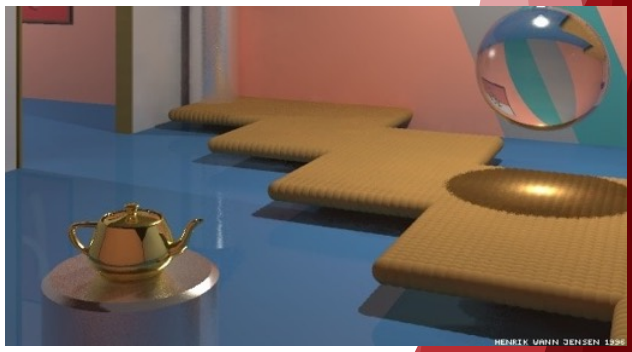
Final Project

- Implement a previously-published rendering algorithm
  - E.g., photon mapping, MLT, decoupled shading, denoising, participating media, gradient-domain rendering
- Three-page report with analysis of results due Nov. 29 in LEARN
- 5-10 minute presentation in class on Nov. 29
- Any language, framework, and libraries permitted

Veach & Guibas ‘97



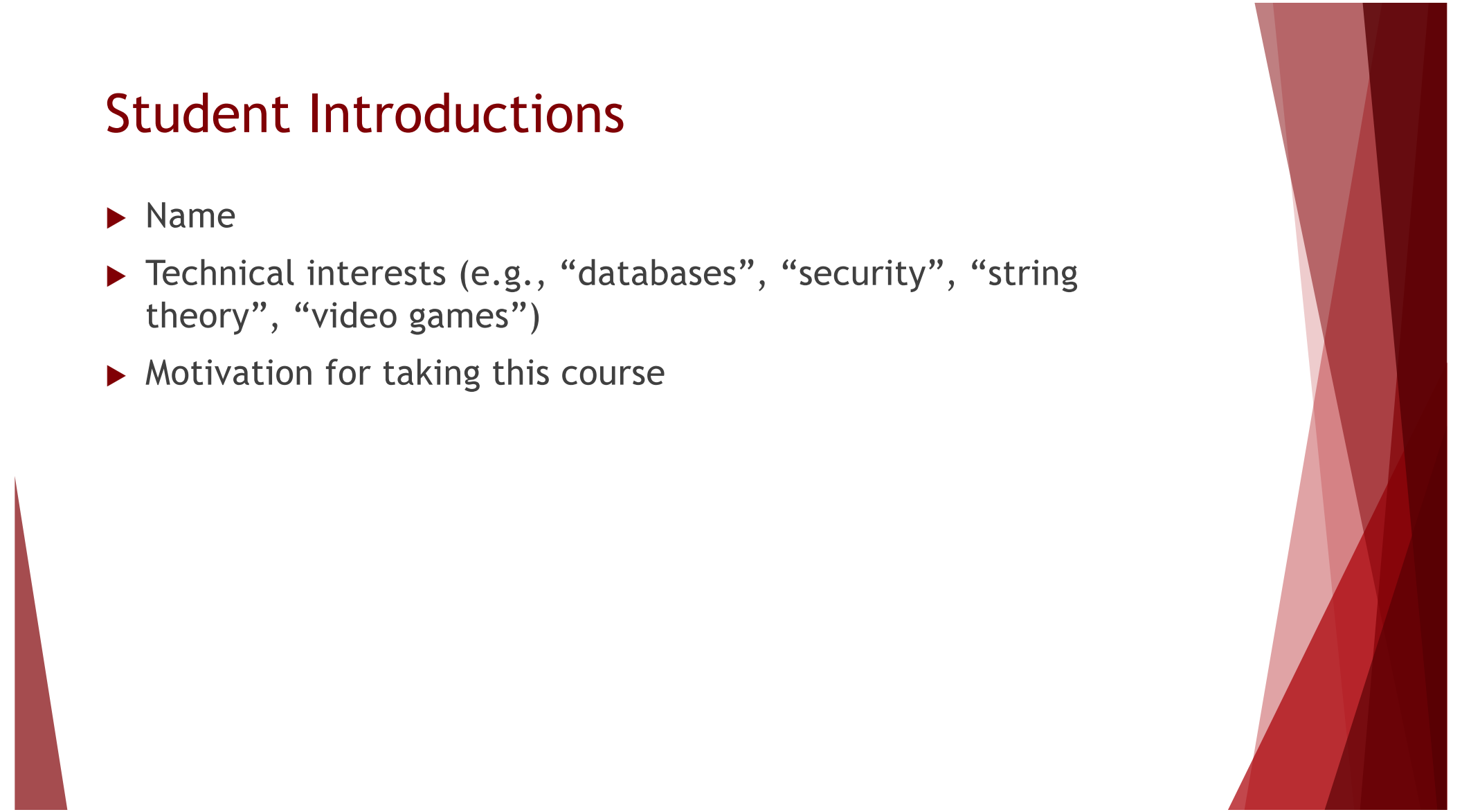
Kallweit et al. ‘17



Jensen ‘96

Student Introductions

- Name
- Technical interests (e.g., “databases”, “security”, “string theory”, “video games”)
- Motivation for taking this course



Questions